

REMARKS/ARGUMENTS

These remarks are made in response to the Office Action of December 21, 2006 (Office Action). As this response is timely filed within the 3-month shortened statutory period, no fee is believed due. However, the Office is expressly authorized to charge any deficiencies or credit any overpayments to Deposit Account No. 50-0951.

In the Office Action, claims 14-34 were rejected under 35 U.S.C. § 101 for claiming non-statutory matter. As of this amendment, claims 14-34 have been amended to claim a "computer-readable storage medium", which is recognized statutory subject matter.

Additionally, claims 1-13, 15, and 18-35 were rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent No. 6,122,644 to Boukobza et al. (hereinafter Boukobza) in view of U.S. Patent No. 6,681,243 to Putzolu et al. (hereinafter Putzolu). Claims 14, 16, and 17 were rejected under 35 U.S.C. §102(a) as being anticipated by Boukobza.

Amendments to the Claims

As of this Amendment, independent claims 1, 14, 18, 22 and 35 have been amended to emphasize certain aspects of the ghost agent in the claimed invention and to differentiate the claimed ghost agent from the autonomous agent disclosed in Boukobza and the agent disclosed in Putzolu. In particular, claims 1, 14, 18, 22, and 35 have been amended to emphasize that a ghost agent associates with a host, and in response to a host moving from a first grid to a second grid, the ghost agent also moves from a first grid to a second grid, copying the actions of the associated host. Dependent Claims 11, 13, 16-17, 19-21, and 24-34 have also been amended to maintain consistency among the claims.

Claims 2, 15, and 23 have been cancelled. No new subject matter has been added by this amendment.

Aspects of Applicants' Invention

Prior to discussing the cited art, it may be useful to reiterate certain aspects of Applicants' claimed invention, including the functioning of the ghost software agent as the host software operates in the various grids within the grid environment. The claimed invention provides systems and methods for debugging a software object within a grid environment. For example, a method, as typified in claim 1, can include identifying a host operating in a grid of a grid environment. The ghost agent within the same grid can then be associated with the host, where the ghost agent is configured to replicate and record the actions of the host. The host can then be debugged based on the actions recorded by the ghost agent. Finally, after the host moves to another grid in the grid environment, the ghost agent can be configured to automatically move to the other grid, following the host in order to replicate and record actions of the host in other grids.

The Claims Define Over the Cited Art

As previously stated, independent claims 1, 18, 22 and 35 were rejected as being unpatentable over Boukobza in view of Putzolu, and claim 14 was rejected as being anticipated by Boukobza. Boukobza discloses a process for monitoring a plurality of object types of a plurality of nodes using a management node in an information system. Boukobza further discloses monitoring the various nodes by using the management node to install a single autonomous agent in a node to be monitored, where the autonomous agent can be configured to monitor software objects, conditions, parameters, and actions in the particular node in which the agent is installed. (See, e.g., Abstract, Col. 2, Lines 21-38) The management node can then retrieve data collected by the various

autonomous agents to perform further analysis of the performance of each node. (See, e.g., Col. 6, Lines 30-34)

It is asserted in the Office Action that the ghost agent of the present invention and the autonomous agent of Boukobza provide equivalent functionality. Applicants respectfully disagree. Boukobza fails to disclose or suggest a ghost agent being associated with each host software object. *Boukobza instead discloses a single autonomous agent being associated with a single node, grid, or device, not a single host software object traversing the grid environment.* (See, e.g., Col. 2, lines 20-37.) The autonomous agent of Boukobza is provided to allow decentralized control of individual nodes, allowing each node to continuously and independently respond to changes in system performance and resources without having to regularly rely on a central system or external resources. (See, e.g., Col. 2, lines 39-55). Therefore, because agents in Boukobza are limited to a single node, they cannot provide debugging for host software objects as they traverse a grid environment.

In contrast, the claimed invention provides an individual ghost agent that associates with an individual host software object, not with a node, grid, or device. Furthermore this ghost software object moves with the associated host software object and records the actions of the associated host as the host traverses the grid environment. Thus, potentially, a single ghost software object in the claimed invention could record every action of an associated host software object, regardless of which node or grid the actions of the associated host software object occur in.

In the Office Action, on page 5, it is acknowledged that Boukobza does not explicitly disclose the step of moving an associated ghost software object from a first grid to a second grid in response to moving of the host software object from the first grid to

the second grid. However, the Office Action asserts that such a capability is disclosed in Putzolu. Applicants respectfully disagree.

Putzolu discloses a method of providing agents that move among network devices to manage the operation of the devices in the network. However, Putzolu fails to disclose associating with and copying the movement of another software object, as in the amended claims. *Putzolu instead discloses that agents move in response to demands on device resources in order to travel to the appropriate network device and make any necessary adjustments to improve network performance, not for debugging host software objects.* (See, e.g., col. 11, lines 49-53). In Putzolu, agents are not associated with software objects. At the most, such agents are associated with a node, as the agent can be configured to reside at a particular node according to a user command. (See, e.g., col. 5, lines 9-19). However, nowhere does Putzolu disclose that such agents can be associated with another software object or that they would follow another software object automatically. In Putzolu, movement is instead based on responding to commands or problems in the network. For example, an agent in Putzolu, would not travel along with software objects arriving at a node the agent is currently at. Instead, the agent of Putzolu would travel through the grid independently, attempting to ascertain the source of software objects arriving at the node and to make any adjustments necessary to improve performance. However, such movement is independent of the subsequent destination of a software object arriving at the original node. As such, the agent of Putzolu cannot replicate and record actions for debugging purposes or otherwise, as agents and software objects do not travel together.

In contrast, a ghost agent in the claimed invention would associate with a specific object and follow the object as it leaves the node and travels to other nodes, in order to record their actions for debugging purposes.

Therefore, Applicants respectfully submit that combining the method of Boukobza to include the agent of Putzolu would not teach or suggest the claimed invention. As previously stated, Boukobza is directed to continuously monitoring and evaluating individual machine or node performance using one or more autonomous agents. Putzolu is directed to managing performance of network nodes by using agents that can travel from node to node and make needed adjustments. However, neither Putzolu nor Boukobza discloses that the agents would be bound to software objects. Allowing the autonomous agent to move from node to node, as suggested in Putzolu, only allows the agent to travel among nodes and make adjustments to devices based on current device and network conditions. However, such a combination still does not provide for replicating and recording actions of host software objects traversing the grid environment in order to debug such software objects, as in the claimed invention.

Accordingly, Boukobza and Putzola fails to teach, suggest, or render obvious every feature recited in independent Claims 1, 14, 18, 22 and 35, as amended. Applicants respectfully submit, therefore, that amended independent Claims 1, 14, 18, 22 and 35 each define over the prior art. Applicants further respectfully assert that whereas the remaining dependent claims each depend from one of independent claims while reciting additional features, the remaining dependent claims likewise define over the prior art. Therefore, Applicants respectfully submit that the dependent claims are patentable on their own merit over Boukobza and are in a form for allowance.

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CONCLUSION

Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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